

the interests of the plant by increasing the surface through which material for the plant's sustenance and growth may be absorbed. The character of such material is determined by the nature of the respective media in which the organs vegetate—of shoots it is gaseous, of roots aqueous.—J. C. ARTHUR, *Univ. of Wis.*

EXPLANATION OF PLATE.—Trichomes of *Echinoecystis lobata*, Torr. & Gr.: drawn with camera lucida; uniformly magnified 250 diam.

A. Vertical section of andrœcium; the epidermal cells transformed into trichomes.

B. Short rigid hair from surface of mature leaf.

C. Cell from interior surface of an injured hypocotyledonary stem; free portion of the cell-wall irregularly thickened; a pseudo-trichome.

D. Reticulated trichome from surface of andrœcium.

E. Capitate trichome on the point of a prickle of the ovary; inclined to one side, as is common.

F. Flat-headed trichome from interior surface of perianth-cup; seen in perspective.

G. Trichome from surface of petal; its head somewhat glandular.

H. Vertical section of upper part of a cotyledonary petiole; epidermis changing into thin-walled hairs.

M. Transverse section near the apex of a growing stem; *lt* filiform, and *st* capitate trichome.

New Plants of New Mexico and Arizona.—**TALINUM HUMILE.**—Acaulescent, glabrous and very succulent; root with an oblong orange-colored tuber an inch long; leaves terete, 2–3 inches long, lying flat upon the ground; the dichotomously branched scapes only half as long as the leaves. 5–10 flowered; sepals pointed; petals light yellow, changing to orange in drying; seeds black, marked with circular lines.

On a rocky table land near the southern base of the Pinos Altos Mountains, New Mexico, Aug. 11, 1880. The plant is probably rare, as only some eighteen specimens could be found. The flowers at 2 o'clock p. m. had not yet opened, hence it is one of those species whose flowers open at evening and close in the morning. In habit it is much like *Calandrinia pygmaea*; it has the color and the seeds nearly of *T. aurantiacum*, but is most distinct from that species, by its habit, and its succulent herbage.

LINUM NEO-MEXICANUM.—Annual or biennial, glabrous and glaucescent; stems 1–2½ feet high, branched from the base, the branches very strictly erect and narrowly paniculate for more than half their length; lowest leaves opposite, and when viewed from above showing a cruciate arrangement, the upper alternate, all lanceolate, or oblong, acute, sessile, entire; pedicels 3–6 lines long, with marginal angles; sepals broadly lanceolate, scarcely equalling the capsules, the margins sparingly glandular denticulate; corolla a half inch in diameter, light yellow; styles free to the base; capsule incompletely 10 celled.

In woods of *Pinus ponderosa* on the Pinos Altos Mountains, New Mexico, August and September, 1880. A tall, graceful species, with sometimes almost racemose inflorescence.

BIGELOVIA (APLODISCUS) RUPESTRIS.—Less than a foot high, much branched from the base, woody and brittle; flowering branch

lets short and very leafy; leaves a half inch long, obovate-lanceolate, entire, ending with an abrupt sharp point, veinless, coriaceous, very punctate on both sides with rather coarse, dark, resinous dots; bark of the green, leafy branchlets minutely warty, and the branches of the dense corymb clothed with small, triangular scales; heads a half inch long, about 12 flowered; the innermost scales of the turbinate involucre linear lanceolate, the outer gradually shorter, all rather acute, with minutely barbellate, scarious margins; style appendages subulate about equaling the stigmatic portion; the short, subturbinate akenes silky-villous.

Growing in dense hemispherical tufts from crevices of perpendicular cliffs which crown the highest San Francisco Mountains in Arizona. In flower Nov. 1, 1880.

From the description of *Bigelovia spathulata* of Lower California this new shrub of Arizona must be its nearest ally.

BIGELOVIA (CHRYSOTHAMNIS) JUNCEA.—Shrubby, much branched, cinereous; branches closely fastigiate, very slender and straight, fastigiate-corymbose at summit; leaves very few, linear-filiform, or none; involucre five-flowered; scales very strictly five-ranked, the outermost short ovate, the inner linear-lanceolate, all obtuse at apex; akenes slender, five-angled, minutely but rather densely pubescent; pappus of slender, scabrous, unequal bristles.

Calcareous bluffs of the Gila River in eastern Arizona very near the New Mexican boundary, in flower Sept. 5, 1880.

A very compact shrub, at time of flowering wholly leafless and reedy looking. It is very closely allied to *B. Bigelovii*, Gray, of Northern New Mexico, but of quite different aspect, with its much more slender, more numerous, and greener branches; while the pubescent akenes mark it as clearly distinct.

HERACIUM CARNEUM.—Stem 2 feet high, simple, leafy up to the base of the ample, loose corymbose panicle, glabrous; radical leaves from ovate to oblong lanceolate densely clothed with long, coarse, somewhat appressed white hairs, the cauline lanceolate and all except the very lowest, smooth and glaucescent, all sessile; peduncles an inch long, minutely bracteolate; the scarcely calyculate involucre glabrous; achenia columnar, very slightly attenuated at summit; pappus bright white; flowers deep flesh color.

South base of the Pinos Altos Mountains, New Mexico, in woods of *Quercus hypoleuca* and *Q. Emoryi*, flowering in October, 1880. A remarkable species of its genus both on account of its flesh-purple flowers, and the strong contrast between the radical and the cauline leaves, the former being white with long wooly hairs, the latter perfectly smooth and a little glaucous. It is perhaps most nearly related to *H. albiflorum* which ranges farther north and west.

EUPHORBIA (ANISOPHYLLUM) VERSICOLOR.—Annual, prostrate, the red stems pubescent with soft, spreading hairs; leaves less hairy, round ovate to oblong, 3 lines long, rounded above, slightly cuneate at base, on petioles a line or more in length; stipules none; involucre solitary in the axils and at the ends of the branchlets; glands erect, purple, their appendages cuneate-obovate, to nearly quadrangular,

white changing to deep rose-red; styles bifid to below the middle; capsules pubescent, angled; seeds light ash colored, short oblong, acutely 4 angled, transversely rugose.

Canons of the San Francisco Mountains, Arizona, September 1880.

Very closely related to *E. setiloba*, Engelm, but a larger plant, (forming mats often more than 2 feet across) less leafy, (the internodes an inch long) and less closely appressed to the earth; the seeds also are of a different color, those of *E. setiloba* being more of a reddish gray; but the most obvious distinction is in the appendages of the glands, which, in the species last named, are divided into three setiform lobes; whereas in *E. versicolor* they are nearly always entire, rarely retuse or erose. These appendages in both species undergo a change of color; but that change is most marked in the new one.

TRADESCANTIA TUBEROSA. — Stems solitary from a horizontal, jointed, tuberiferous rhizome, 6 to 12 inches high, simple, slender, retroversely puberulent; leaves narrowly linear, rather fleshy, not open; sheaths ciliate; umbels terminal few or many flowered; pedicels and sepals glandular hairy; corolla purple.

Pinos Altos Mountains, New Mexico, in flower August 23, 1880.

The plant would readily pass for a form of *T. Virginica*, which is also common in the same region, but for its entirely different root and habit of growth. The yellow tubers, borne singly or by twos and threes, at the joints of the rhizome, are oblong, an inch or more in length, and obtuse at both ends. My correspondents have received specimens of this plant under another name, which I hereby beg them to erase; substituting the one here given. — EDWARD LEE GREENE.

The British Moss-Flora, By *R. Braithwaite*, M. D., F. L. S. &c. — So large a proportion of the North American Mosses are identical with those of Great Britain that the present work may well be commended to American botanists. It is issued in parts, as was Schimper's *Bryologia Europæa*, and it apparently yields in no respect to that great work in the character and completeness both of the letter press and the plates. But it promises to be of moderate extent, the price is certainly moderate, and the text is entirely in English. The mosses are taken up monographically, family by family in a natural arrangement, this arrangement being essentially that recently proposed by Lindberg. Parts 1 and 2 have only two plates each; but the third, a monograph of the *Polytrichaceæ*, has four, which illustrate fifteen species. It is intended to go on with four plates to each fasciculus, and to charge at the rate of a shilling a plate, including all letter press, and this runs at the rate of a page or two to each species. At this price remitted to the author, at 303 Clapham Road, the work will be sent post paid to subscribers in the United States. Publishers do not like to meddle with works like this, of limited sale and occasional issue in detached parts, so the author, to whom this is a labor of love, acts as his own publisher, and is glad to receive subscriptions directly. Certainly he spares neither pains nor expense. The work is as beautiful as it is excellent and thorough. It is in imperial octavo, descrip-